



**TRANSPORTATION CABINET**

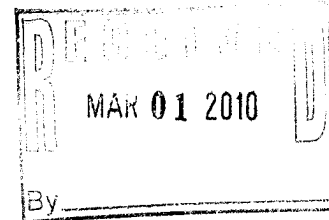
Frankfort, Kentucky 40622  
www.transportation.ky.gov/

**Steven L. Beshear**  
Governor

**Michael W. Hancock, P.E.**  
Acting Secretary

March 1, 2010

Division of Water  
Surface Water Permits Branch  
ATTN: Larry Sowder  
14 Reilly Road  
Frankfort, KY 40601



SUBJECT: **Individual KPDES Permit**  
Allen County Item No. 03-8100.00  
KY-100 Bridge Replacement over Trammel Creek

Dear Mr. Sowder:

Respectfully submitted is an Individual KPDES permit application for the subject project. This project is located in Allen County, Kentucky and will consist of replacing the structurally deficient bridge over Trammel Creek on KY-100. Trammel Creek is a special use water with designations as Cold Water Aquatic Habitat, Exceptional Water, and a Reference Reach Water.

Enclosed should be the KPDES application. If you have any questions or need additional information, please contact me at (502) 564-7250 or by email at: ronb.rigneyii@ky.gov.

Sincerely,

Ronald B. Rigney, II  
Division of Environmental Analysis  
Kentucky Transportation Cabinet



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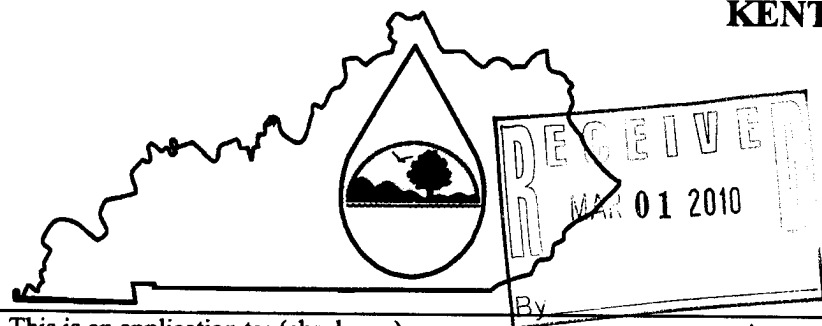
KY 01081 00

# KPDES FORM 1

A1: 106875

## KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

### PERMIT APPLICATION



This is an application to: (check one)

- ☐ Apply for a new permit.  
☐ Apply for reissuance of expiring permit.  
☒ Apply for a construction permit.  
☐ Modify an existing permit.

Give reason for modification under Item II.A.

A complete application consists of this form and one of the following:

Form A, Form B, Form C, Form F, or Form SC

For additional information contact:

KPDES Branch (502) 564-3410

I. FACILITY LOCATION AND CONTACT INFORMATION		AGENCY USE	0	1	0	8	6	2	6
A. Name of Business, Municipality, Company, Etc. Requesting Permit Kentucky Transportation Cabinet									
B. Facility Name and Location					C. Primary Mailing Address (all facility correspondence will be sent to this address). Include owner's mailing address (if different) in D.				
Facility Location Name: KY 100 over Trammel Creek, Allen County, KY					Facility Contact Name and Title: Mr. <input checked="" type="checkbox"/> Ms. <input type="checkbox"/> David M. Waldner, P.E.				
Facility Location Address (i.e. street, road, etc., not P.O. Box): KY 100 over Trammel Creek					Mailing Address: 200 Mero Street				
Facility Location City, State, Zip Code: KY 100 over Trammel Creek 1.0 mile south west of KY 585					Mailing City, State, Zip Code: Frankfort, KY 40622				
D. Owner's name (if not the same as in part A and C): N/A					Facility Contact Telephone Number: (502) 564-7250				
Owner's Mailing Address: N/A					Owner's Telephone Number (if different): N/A				
II. FACILITY DESCRIPTION									
A. Provide a brief description of activities, products, etc: The purpose of this project is to replace an existing bridge over Trammel Fork in Allen County on KY 100. Bridge replacement is needed due to the existing bridge having a low sufficiency rating and the deck being too narrow..									
B. Standard Industrial Classification (SIC) Code and Description									
Principal SIC Code & Description:		1622 - Bridge Construction							
Other SIC Codes:		1611 - Linear Projects		N/A		N/A			

III. FACILITY LOCATION	
A. Attach a U.S. Geological Survey 7 1/2 minute quadrangle map for the site. (See instructions)	
B. County where facility is located: Allen	City where facility is located (if applicable): N/A
C. Body of water receiving discharge: Trammel Fork	
D. Facility Site Latitude (degrees, minutes, seconds): 36°43'52" N	Facility Site Longitude (degrees, minutes, seconds): 86°16'22" W
E. Method used to obtain latitude & longitude (see instructions): Topographic Map Coordinates Quad: Adolphus	
F. Facility Dun and Bradstreet Number (DUNS #) (if applicable): N/A	

<b>IV. OWNER/OPERATOR INFORMATION</b>	
A. Type of Ownership: <input type="checkbox"/> Publicly Owned <input type="checkbox"/> Privately Owned <input checked="" type="checkbox"/> State Owned <input type="checkbox"/> Both Public and Private Owned <input type="checkbox"/> Federally owned	
B. Operator Contact Information (See instructions)	
Name of Treatment Plant Operator: N/A	Telephone Number: N/A
Operator Mailing Address (Street): N/A	
Operator Mailing Address (City, State, Zip Code): N/A	
Is the operator also the owner? Yes <input type="checkbox"/> No <input type="checkbox"/>	Is the operator certified? If yes, list certification class and number below. Yes <input type="checkbox"/> No <input type="checkbox"/>
Certification Class: N/A	Certification Number: N/A

<b>V. EXISTING ENVIRONMENTAL PERMITS</b>		
Current NPDES Number: N/A	Issue Date of Current Permit: N/A	Expiration Date of Current Permit: N/A
Number of Times Permit Reissued: N/A	Date of Original Permit Issuance: N/A	Sludge Disposal Permit Number: N/A
Kentucky DOW Operational Permit #: N/A	Kentucky DSMRE Permit Number(s): N/A	

Which of the following additional environmental permit/registration categories will also apply to this facility?

CATEGORY	EXISTING PERMIT WITH NO.	PERMIT NEEDED WITH PLANNED APPLICATION DATE
Air Emission Source	N/A	N/A
Solid or Special Waste	N/A	N/A
Hazardous Waste - Registration or Permit	N/A	N/A

<b>VI. DISCHARGE MONITORING REPORTS (DMRs)</b>
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KPDES permit holders are required to submit DMRs to the Division of Water on a regular schedule (as defined by the KPDES permit). Information in this section serves to specifically identify the name and telephone number of the DMR official and the DMR mailing address (if different from the primary mailing address in Section I.C).

A. DMR Official (i.e., the department, office or individual designated as responsible for submitting DMR forms to the Division of Water):	Mr. Dave Harmon
DMR Official Telephone Number:	502-564-7250

B. DMR Mailing Address:	
<ul style="list-style-type: none"> <li>Address the Division of Water will use to mail DMR forms (if different from mailing address in Section I.C), or</li> <li>Contact address if another individual, company, laboratory, etc. completes DMRs for you; e.g., contract laboratory address.</li> </ul>	
DMR Mailing Name:	N/A
DMR Mailing Address:	N/A
DMR Mailing City, State, Zip Code:	N/A


## VII. APPLICATION FILING FEE

KPDES regulations require that a permit applicant pay an application filing fee equal to twenty percent of the permit base fee. Please examine the base and filing fees listed below and in the Form 1 instructions and enclose a check payable to "Kentucky State Treasurer" for the appropriate amount (for permit renewals, please include the KPDES permit number on the check to ensure proper crediting). Descriptions of the base fee amounts are given in the "General Instructions."

Facility Fee Category:	Filing Fee Enclosed: \$0
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## VIII. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

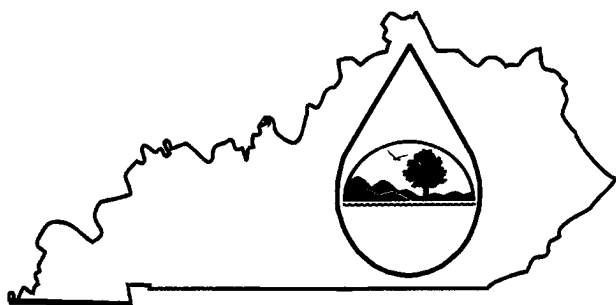
NAME AND OFFICIAL TITLE (type or print): Mr. <input checked="" type="checkbox"/> Ms. <input type="checkbox"/> David M. Waldner, Director of DEA	TELEPHONE NUMBER (area code and number): 502-564-7250
SIGNATURE 	DATE: 3/1/10

Return completed application form and attachments to: **KPDES Branch, Division of Water, Frankfort Office Park, 14 Reilly Road, Frankfort, KY 40601.** Direct questions to: **KPDES Branch at (502) 564-3410.**



## KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

### PERMIT APPLICATION



A complete application consists of this form and Form 1.  
For additional information, Contact KPDES Branch, (502) 564-3410.

<b>I. OUTFALL LOCATION</b>	AGENCY USE	0	1	0	8	6	2	6
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For each outfall list the latitude and longitude of its location to the nearest 15 seconds and name the receiving water.

A. Outfall Number	B. Latitude	C. Longitude	D. Receiving Water (name)	D. Receiving Water use Classification
1	36°43'41" N	86°16'32" W	Unnamed Tributary to Trammel Creek	Warm Water Aquatic Habitat, Primary Contact Recreation, Secondary Contact Recreation, and Domestic Water Supply
2	36°43'47" N	86°16'29" W	Unnamed Tributary to Trammel Creek	Warm Water Aquatic Habitat, Primary Contact Recreation, Secondary Contact Recreation, and Domestic Water Supply
3	36°43'51" N	86°16'23" W	Trammel Creek	Exceptional Water, Outstanding State Resources Water, Cold Water Aquatic Habitat, Primary Contact Recreation, Secondary Contact Recreation
4	36°43'55" N	86°16'15" W	Trammel Creek	Exceptional Water, Outstanding State Resources Water, Cold Water Aquatic Habitat, Primary Contact Recreation, Secondary Contact Recreation
5	36°43'59" N	86°16'06" W	Unnamed Tributary to Trammel Creek	Warm Water Aquatic Habitat, Primary Contact Recreation, Secondary Contact Recreation, and Domestic Water Supply
6	36°44'01" N	86°16'02" W	Unnamed Tributary to Trammel Creek	Warm Water Aquatic Habitat, Primary Contact Recreation, Secondary Contact Recreation, and Domestic Water Supply

### II. IMPROVEMENTS

A. Are you now required by any federal, state, or local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

1. Identification of Conditions, Agreements, Etc.	2. Affected Outfalls No. Source of Discharge	3. Brief Description of Project	4. Final Compliance Date a. req. b. proj.
N/A	N/A N/A	N/A	N/A N/A

B. You may attach additional sheets describing any additional water pollution (or other environmental projects which may affect your discharges) you now have under way or which you plan. Indicate whether each program is now under way or planned, and indicate your actual or planned schedules for construction.

### III. SITE DRAINAGE MAP

Attach a site map showing topography (or indicating the outline of drainage areas served by the outfall(s) covered in the application if a topographic map is unavailable) depicting the facility including: each of its intake and discharge structures; the drainage area of each storm water outfall; paved areas and buildings within the drainage area of each storm water outfall, each known past or present areas used for outdoor storage or disposal of significant materials, each existing structural control measure to reduce pollutants in storm water runoff, materials loading and access areas, areas where pesticides, herbicides, soil conditioners and fertilizers are applied; each of its hazardous waste treatment, storage or disposal units (including each area not required to have a RCRA permit which is used for accumulating hazardous waste under 40 CFR 262.34); each well where fluids from the facility are injected underground; springs, and other surface water bodies which receive storm water discharges from the facility.

#### IV. NARRATIVE DESCRIPTION OF POLLUTANT SOURCES

A. For each outfall, provide an estimate of the area (include units) of impervious surfaces (including paved areas and building roofs) drained to the outfall, and an estimate of the total surface area drained by the outfall.

Outfall Number	Area of Impervious Surface (provide units)	Total Area Drained (provide units)	Outfall Number	Area of Impervious Surface (provide units)	Total Area Drained (provide units)
#1	0.4 acres	0.7 acres	#4	0.9 acres	94 acres
#2	0.4 acres	0.8 acres	#5	0.8 acres	13.1 acres
#3	0.7 acres	5.6 acres	#6	0.3 acres	75 acres

B. Provide a narrative description of significant materials that are currently or in the past three years have been treated, stored or disposed in a manner to allow exposure to storm water; method of treatment, storage, or disposal; past and present materials management practices employed to minimize contact by these materials with storm water runoff; materials loading and access areas; and the location, manner, and frequency in which pesticides, herbicides, soil conditioners, and fertilizers are applied.

During the construction of roadways and bridges, the main pollutant of concern is sediment associated with land disturbing activities. Typical pollutants associated with a roadway and bridge once they are in use include the following:

- Heavy metals from tire tread and brake linings
- pH from road treatment operations during freezing weather
- Petrochemicals from auto leaks
- TSS from dirt and debris that is transported by tires


The associated BMP Template and Supplemental Data discuss how these pollutants will be addressed.

C. For each outfall, provide the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of the treatment the storm water receives, including the schedule and type of maintenance for control and treatment measures and the ultimate disposal of any solid or fluid wastes other than by discharge.

Outfall Number	Treatment	List Codes from Table F-1
#1	Minimal drainage; Enhanced silt trap and turf reinforcement mat swale post-construction	4 - A
#2	Minimal drainage; turf reinforcement mat swale post-construction	4 - A
#3	Sedimentation basin EPSC and turf reinforcement mat swales, enhanced silt trap and rock bank with live branch post-construction.	4 - A
#4	Turf reinforcement mat swale, grade control structures, and enhanced silt trap post-construction.	4 - A
#5	Turf reinforcement mat swale and enhanced silt trap post-construction.	4 - A
#6	Turf reinforcement mat swales, enhanced silt traps, bank stabilization with live staking and grade control structures post-construction.	4 - A

#### V. NON-STORM WATER DISCHARGES

A. I certify under penalty of law that the outfall(s) covered by this application have been tested or evaluated for the presence of non-storm water discharges, and that all non-storm water discharges from these outfall(s) are identified in either an accompanying Form C or Form SC application for the outfall.

Name and Official Title (type or print)	Signature	Date Signed
David M. Waldner, Director of DEA		3/1/10

B. Provide a description of the method used, the date of any testing, and the onsite drainage points that were directly observed during a test.

N/A

#### VI. SIGNIFICANT LEAKS OR SPILLS

Provide existing information regarding the history of significant leaks or spills of toxic or hazardous pollutants at the facility in the last three years, including the approximate date and location of the spill or leak, and the type and amount of material released.

N/A. Construction project.

**VII. DISCHARGE INFORMATION**

A,B,C, & D: See instructions before proceeding. Complete one set of tables for each outfall. Annotate the outfall number in the space provided. Tables F-1, F-2, and F-3 are included on separate pages.

E: Potential discharges not covered by analysis - is any toxic pollutant listed in Table F-2, F-3, or F-4, a substance which you currently use or manufacture as an intermediate or final product or by product.

☐ Yes (list all such pollutants below) ☒ No (go to Section IX)

N/A

**VIII. BIOLOGICAL TOXICITY TESTING DATA**

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☐ Yes (list all such results below) ☒ No (go to Section IX)

N/A Construction Project.

**IX. CONTRACT ANALYSIS INFORMATION**

Were any of the analyses reported in item VII performed by a contract laboratory or consulting firm?

☐ Yes (list the name, address and telephone number of, and pollutants analyzed by each such laboratory or firm below; use additional sheets if necessary).  
☒ No (go to Section IX)

A. Name	B. Address	C. Area Code & Phone No.	D. Pollutants Analyzed
N/A	N/A	N/A	N/A

**XIII. CERTIFICATION**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations.

NAME & OFFICIAL TITLE (type or print)

AREA CODE AND PHONE NO.

Mr. ☒ Ms. ☐ David M. Waldner

502-564-7250

SIGNATURE

DATE SIGNED



3/1/10



## OUTFALL NO:

Pollutant and CAS Number (if available)	Maximum Values (include units)		Average Values (include units)		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During 1 <sup>st</sup> 20 Minutes	Flow-weighted Composite	Grab Sample Taken During 1 <sup>st</sup> 20 Minutes	Flow-weighted Composite		
Oil and Grease		N/A				
Biological Oxygen Demand BOD <sub>5</sub>						
Chemical Oxygen Demand (COD)						
Total Suspended Solids (TSS)						
Total Kjeldahl Nitrogen						
Nitrate plus Nitrite Nitrogen						
Total Phosphorus						
pH	Minimum	Maximum	Minimum	Maximum		

[illegible]

Part C - List each pollutant shown in Tables F-2, F-3, and F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

[illegible]

Part D - Provide data for the storm event(s) which resulted in the maximum values for the flow-weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (gal/min or specify units)	6. Total flow from rain event (gallons or specify units)

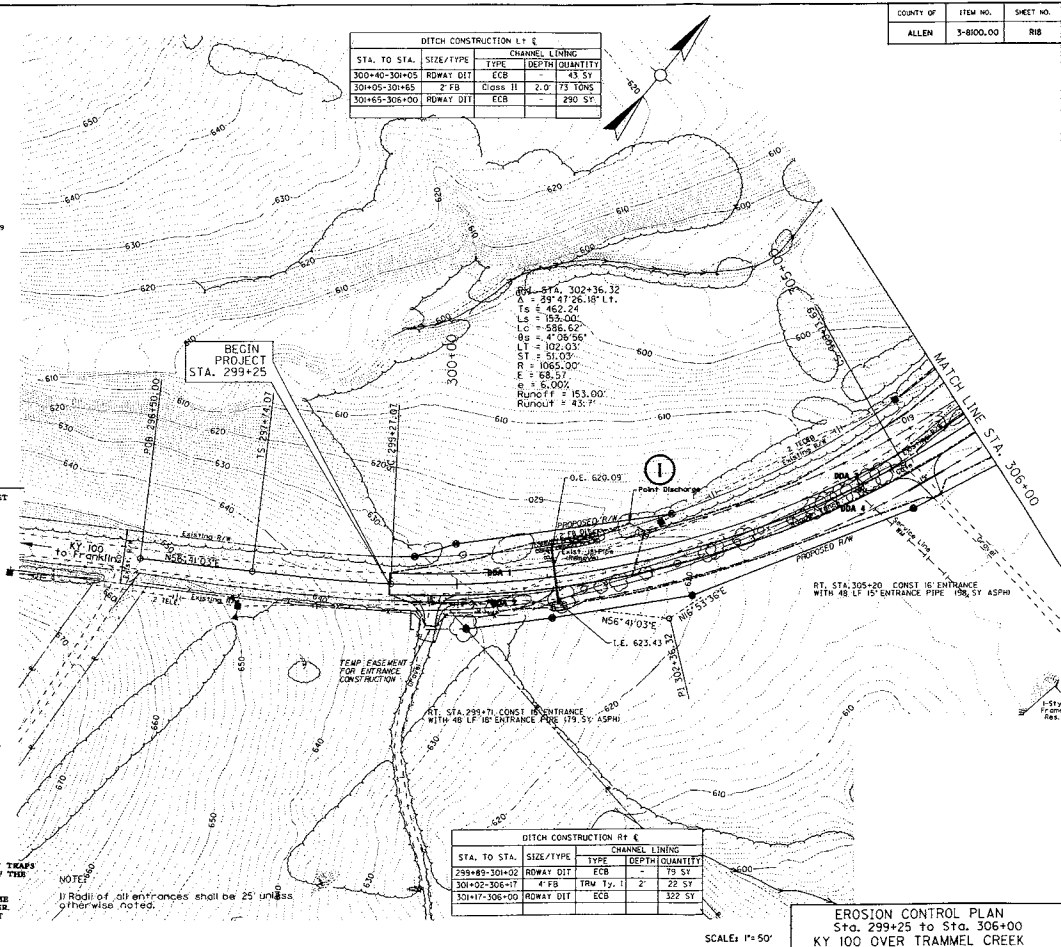
7. Provide a description of the method of flow measurement or estimate.

SILT TRAP TYPE A ALTERNATE 1	AS
SILT TRAP TYPE A ALTERNATE 2	AS
SILT TRAP TYPE B	AS
SILT CHECK TYPE C	AS
SILT FENCE	SF
TEMPORARY SILT DITCH	SD
DISTURBED DRAINAGE AREA	DA
OVERLAND SHEET FLOW	OSF
PROPOSED R/W	PR
PROPOSED EASEMENT	PE

SECTION	MINIMUM DISTANCE FROM DITCH	MINIMUM DISTANCE FROM ROAD
DDA 1	0.25	1044
DDA 2	0.050	324
DDA 3		
DDA 4		

\* DDA 3 & DDA 4 areas shown on sheet RIB

STA. TO STA.	SIZE/TYPE	CHANNEL LINING	DEPTH	QUANTITY
300+00-300+05	ROWAY DIT	ECB	4.5 SY	
300+05-300+05	2' FB	Cross II	2.0' 73 TONS	
300+05-300+00	ROWAY DIT	ECB	290 SY	



### EROSION CONTROL NOTES

ALL SILT CONTROL DEVICES SHALL BE SIZED TO RETAIN A VOLUME OF 5400 CUBIC FEET PER DISTURBED CONTRIBUTING ACRES.

THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS TO MINIMIZE THE AMOUNT OF DISTURBED GROUND DURING EACH PHASE OF CONSTRUCTION. THE CONTRACTOR SHALL COMPUTE THE VOLUME NECESSARY TO CONTROL SEDIMENT DURING EACH PHASE OF CONSTRUCTION. AS WORK PROCEEDS, SILT TRAPS MAY BE ADDED OR REMOVED IN ORDER TO ACHIEVE THE BEST MANAGEMENT PLAN. THE REQUIRED VOLUME AT EACH ADDED SILT TRAP SHALL BE COMPUTED AS UP GRADIENT CONTRIBUTING AREAS ARE DISTURBED OR ARE STABILIZED TO THE SATISFACTION OF THE ENGINEER. THE REQUIRED VOLUME CALCULATION FOR EACH SILT TRAP SHALL BE DETERMINED BY THE CONTRACTOR AND VERIFIED BY THE ENGINEER. THE REQUIRED VOLUME AT EACH SILT TRAP MAY BE REDUCED BY THE FOLLOWING AMOUNTS:

- UP GRADIENT AREAS NOT DISTURBED (ACRES).
- UP GRADIENT AREAS THAT HAVE BEEN RECLAIMED AND PROTECTED BY EROSION CONTROL BLANKET OR OTHER GROUND PROTECTION MATERIAL (ACRES).
- UP GRADIENT AREAS THAT HAVE BEEN PROTECTED BY SILT FENCE (ACRES). AREAS PROTECTED BY SILT FENCE SHALL BE COMPUTED AT A MAXIMUM RATE OF 100 SQUARE FEET PER LINEAR FOOT OF SILT FENCE.
- UP GRADIENT AREAS THAT HAVE BEEN PROTECTED BY SILT TRAPS (ACRES).

THE EROSION CONTROL PLAN SHALL BE ANNOTATED AS THE WORK PROCEEDS BY THE CONTRACTOR TO DETAIL THE SELECTION OF EACH EROSION CONTROL DEVICE USED AND THE VOLUME PROVIDED BY EACH SILT TRAP IN ACCORDANCE WITH THE DOCUMENTATION PROCEDURES ESTABLISHED BY THE DIVISION OF CONSTRUCTION.

IF A SILT BASIN IS NOT USED THEN ONE SILT TRAP, TYPE A ALTERNATE NUMBER 2 OR SILT TRAP, TYPE B SHALL ALWAYS BE PLACED AT THE MOST REMOTE DOWNSTREAM COLLECTION POINT PRIOR TO DISCHARGING INTO A BLUE LINE STREAM OR ONTO AN ADJACENT PROPERTY OWNER. WHERE OVERLAND FLOW EXIST A SILT FENCE OR OTHER FILTER DEVICES MAY BE USED ON THE OVERLAND FLOW MAY BE DIVERTED TO ONE OF THE FOREMENTIONED SILT BASIN OR TRAPS.

THE EROSION CONTROL PLANS DO NOT CONSTITUTE A BMP BY THEMSELVES. THEY PROVIDE A STARTING POINT FOR THE CONTRACTOR AND RESIDENT ENGINEER TO DEVELOP THE BMP ACCORDING TO SECTION 214.04 OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AND THE SUPPLEMENTAL SPECS EFFECTIVE WITH THE OCTOBER, 1994 LETTING.

EROSION CONTROL MEASURES SHALL BE IN PLACE AND FUNCTIONING PRIOR TO ANY EXCAVATION OR DISTURBANCE WITHIN A DRAINAGE AREA.

THE CONTRACTOR SHALL BE REQUIRED TO CLEAN OUT (REMOVE SEDIMENT FROM) SILT TRAPS AND SILT FENCES WHENEVER THEY BECOME ONE-HALF FULL AND PROPERLY DISPOSE OF THIS MATERIAL AT SITES APPROVED BY THE RESIDENT ENGINEER.

EROSION CONTROL MEASURES EMPLOYED BY THE CONTRACTOR WILL BE UNIQUE TO THE PROJECT AND WORK CONDITIONS AND SHALL BE APPROVED BY THE RESIDENT ENGINEER. THE DEVELOPMENT AND UTILIZATION OF THESE MEASURES WILL BE RECORDED AS PART OF THE BMP, KEPT ON SITE, AND AVAILABLE FOR PUBLIC INSPECTION.

NOTE: If Radii of all entrances shall be 25' unless otherwise noted.

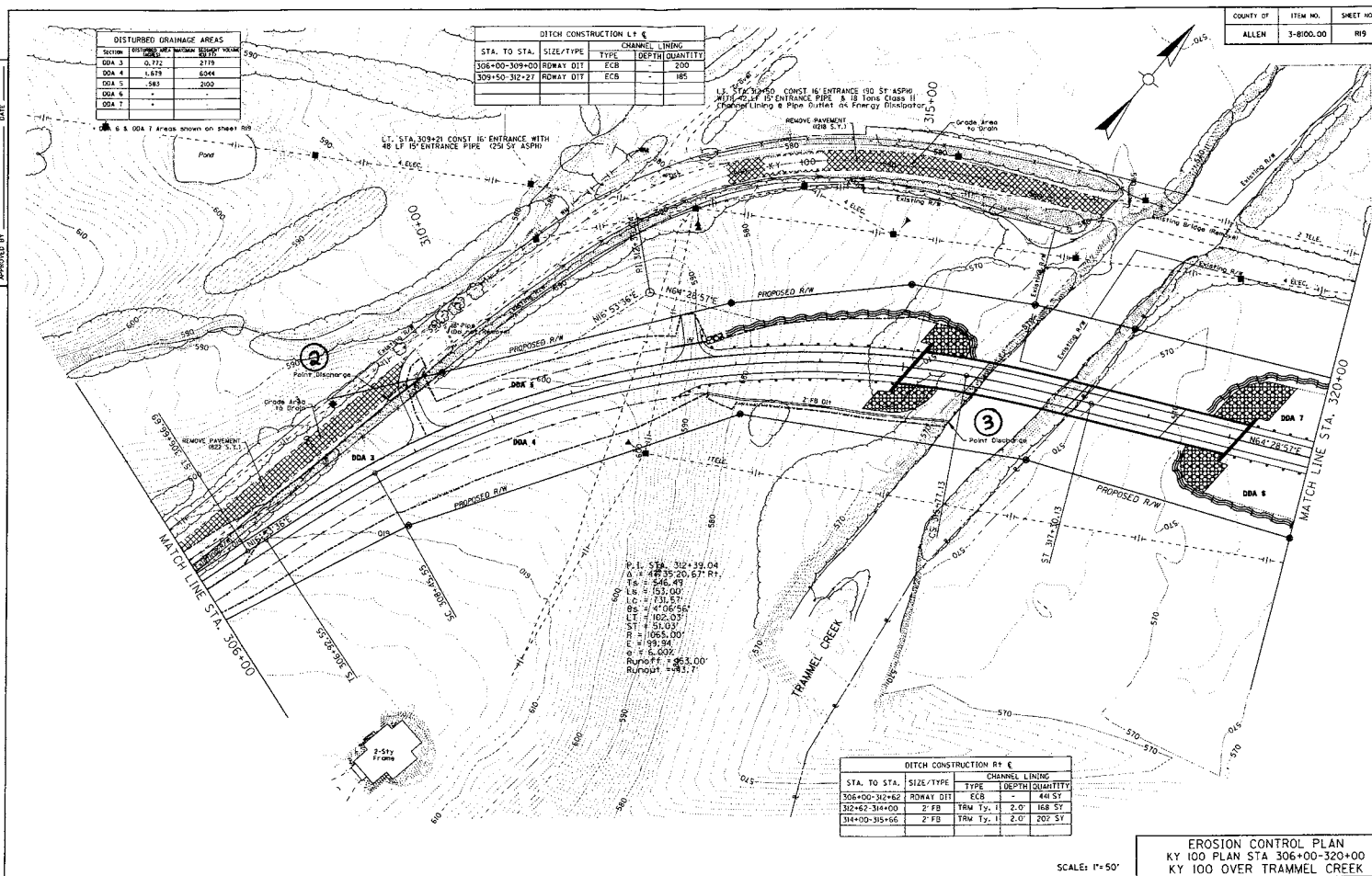
STA. TO STA.	SIZE/TYPE	CHANNEL LINING	DEPTH	QUANTITY
299+89-300+02	ROWAY DIT	ECB	73 SY	
300+02-300+17	4' FB	TRW 1y.1	2' 22 SY	
300+17-300+00	ROWAY DIT	ECB	322 SY	

EROSION CONTROL PLAN  
Sta. 299+25 to Sta. 306+00  
KY 100 OVER TRAMMEL CREEK

SCALE: 1"=50'

DITCH CONSTRUCTION L.P.				
STA. TO STA.	SIZE/TYPE	CHANNEL LINING		
		TYPE	DEPTH	QUANTITY
306+00-309+00	RDWAY DIT	ECB	-	200
309+50-312+27	RDWAY DIT	ECB	-	185

PREPARED BY	DATE
CHECKED BY	DATE
APPROVED BY	DATE



SCALE: 1"=50'

EROSION CONTROL PLAN  
KY 100 PLAN STA 306+00-320+00  
KY 100 OVER TRAMMEL CREEK

DITCH CONSTRUCTION L.F. €				
STA. TO STA.	SIZE/TYPE	TYPE	DEPTH	QUANTITY
325+00-331+00	ROWY DIT	ECB	-	400 SY

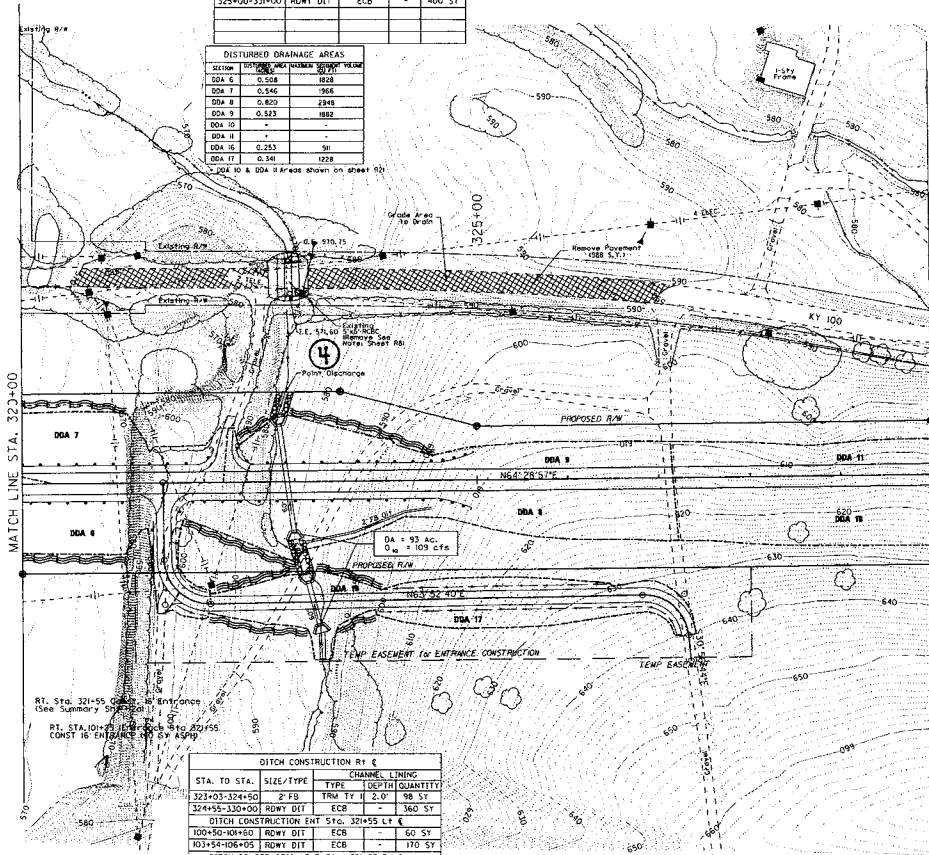
DISTURBED DRAINAGE AREAS				
SECTION	STARTING POINT	ENDING POINT	LENGTH	AREA
DDA 6	0.528	1828		
DDA 7	0.546	1866		
DDA 8	0.820	2345		
DDA 9	0.523	1882		
DDA 10	-	-		
DDA 11	-	-		
DDA 12	0.253	911		
DDA 13	0.341	1278		

DDA 10 & DDA 13 cross shown on sheet R19

DITCH CONSTRUCTION R.F. €				
STA. TO STA.	SIZE/TYPE	TYPE	DEPTH	QUANTITY
323+00-324+50	2' FD	TRM TY 4	2'-0"	98 SY
324+50-330+00	ROWY DIT	ECB	-	360 SY
DITCH CONSTRUCTION ENT STA. 321+55 L.F. €				
100+50-101+60	ROWY DIT	ECB	-	60 SY
103+50-104+05	ROWY DIT	ECB	-	170 SY
DITCH CONSTRUCTION ENT STA. 321+55 R.F. €				
101+30-101+62	ROWY DIT	ECB	-	21 SY
103+50-107+14	ROWY DIT	ECB	-	229 SY

MATCH LINE STA. 323+00

MATCH LINE STA. 330+00



SCALE: 1"=50'

EROSION CONTROL PLAN  
KY 100 PLAN STA 320+00-330+00  
KY 100 OVER TRAMMEL CREEK

DISTURBED DRAINAGE AREAS		
SECTION	AREA (AC)	PERCENT
DDA 10	0.899	13.00
DDA 11	0.597	20.3
DDA 12	0.485	17.60
DDA 13	0.350	13.00
DDA 14	0.246	8.8
DDA 15	0.378	13.61

P.I. STA. 335+47.69  
 $\Delta = 33^\circ 54' 24.24''$  L.P.  
 $T_s = 463.47$   
 $L_s = 151.00'$   
 $LC = 589.78$   
 $\theta_s = 4^\circ 06' 56''$   
 $L_T = 102.03'$   
 $ST = 51.03'$   
 $R = 1065.00'$   
 $E = 68.99'$   
 $\theta = 6.00^\circ$   
 $Runoff = 153.00'$   
 $Runoff = 43.7'$

DITCH CONSTRUCTION R+ E		
STA. TO STA.	SIZE/TYPE	CHANNEL LINING
		TYPE DEPTH QUANTITY
330+00-332+10	ROWY DIT	ECB - 140 SY
332+10-332+64	2' FB TRW TY I	- 36 SY
332+64-336+55	ROWY DIT	ECB - 241 SY
336+55-338+25	2' FB TRW TY I	- 197 SY
338+25-339+04	ROWY DIT	ECB - 105 SY

SCALE: 1"=50'

EROSION CONTROL PLAN  
 KY 100 PLAN STA 330+00-340+00  
 KY 100 OVER TRAMMEL CREEK

KyTC BMP Plan for Project PCN ## - ####



**Kentucky Transportation Cabinet**

**Highway District 3**

**And**

**\_\_\_\_\_ (2), Construction**

**Kentucky Pollutant Discharge Elimination System**

**Permit KYR10**

**Best Management Practices (BMP) plan**

**Groundwater protection plan**

**For Highway Construction Activities**

**For**

**Bridge Replacement over Trammel Creek (KY100)**

**Allen County**

**Contract ID ##### (2)**

**Six Year Plan 3-8100**

Revised 2/8/10

## Project information

Note – (1) = Design (2) = Construction (3) = Contractor

1. Owner – Kentucky Transportation Cabinet, District 3
2. Resident Engineer: (2)
3. Contractor name: (2)
  - Address: (2)
  - Phone number: (2)
  - Contact: (2)
  - Contractors agent responsible for compliance with the KPDES permit requirements (3):
4. Contract ID Number (2)
5. Route (Address): KY 100, Red Hill, KY
6. Latitude/Longitude (project mid-point): 36° 43' 52"N; 86° 16' 22" W
7. County: Allen
8. Project start date (date work will begin): (2)
9. Projected completion date: (2)



## **A. Site description:**

1. Nature of Construction Activity: Replacement of Bridge and new approaches on KY 100 over Trammel Creek in Allen County.
2. Order of major soil disturbing activities (2) and (3)
3. Projected volume of material to be moved: 91,333 cu yd
4. Estimate of total project area: 13.5 acres
5. Estimate of area to be disturbed: 10.0 acres
6. Post construction runoff coefficient will be included in the project drainage folder. Persons needing information pertaining to the runoff coefficient will contact the resident engineer to request this information. (1)
7. Data describing existing soil condition: According to the US Agriculture Soil Survey for this area, the soils consist of 70% Nolin Silt Loam, 15% Caneyville Rock Outcrop complex, and 15% Trimble gravelly silt loam.
8. Data describing existing discharge water quality: Existing discharge is in the form of point discharges with little to no BMPs associated with them.
9. Receiving water name: Trammel Creek
10. TMDLs and Pollutants of Concern in Receiving Waters: There are no TMDLs in this section of Trammel Creek. However, this section of Trammel Creek is an exceptional water, outstanding state resource water and cold water aquatic habitat, so habitat and hydrography are important.
11. Site map – Project layout sheet plus the erosion control sheets in the project plans that depict Disturbed Drainage Areas (DDAs) and related information. These sheets depict the existing project conditions with areas delineated by DDA (drainage area bounded by watershed breaks and right of way limits), the storm water discharge locations (either as a point discharge or as overland flow) and the areas that drain to each discharge point. These plans define the limits of areas to be disturbed and the location of control measures. Controls will be either site specific as designated by the designer or will be annotated by the contractor and resident engineer before disturbance commences. The project layout sheet shows the surface waters and wetlands.

12. Potential sources of pollutants:

The primary source of pollutants is solids that are mobilized during storm events. Other sources of pollutants include oil/fuel/grease from servicing and operating construction equipment, concrete washout water, sanitary wastes and trash/debris. (3)

**B. Sediment and Erosion Control Measures:**

1. **Erosion Control Sheets.** Plans for highway construction projects will include erosion control sheets that depict Disturbed Drainage Areas (DDAs) and related information. These plan sheets will show the existing project conditions with areas delineated by DDA within the right of way limits, the discharge points and the areas that drain to each discharge point. Project managers and designers will analyze the DDAs and identify, design, and quantify Best Management Practices (BMPs) that are site specific. The balance of the BMPs for the project will be listed in the bid documents for selection and use by the contractor on the project with approval by the resident engineer.

Projects that do not have DDAs annotated on the erosion control sheets will employ the same concepts for development and managing BMP plans.

The following non-structural BMPs will be implemented throughout the project duration:

- Sediment control BMPs will be maintained when the sediment reaches 1/3 the depth of the BMP.
  - Appropriate stock of straw ECB shall be available onsite at all times
  - Straw erosion control blanket (ECB) or blown straw shall be applied within 24 hours of the cessation of the land disturbing activity. If blown straw is used, the blower shall be kept on-site during land disturbing activities.
  - Disturbed areas shall be stabilized prior to a rain event
  - EPSC/SWPPP inspections shall be performed at least twice a week.
2. **Annotation.** Following award of the contract, the contractor and resident engineer will annotate the erosion control sheets showing location and type of BMPs for each of the DDAs that will be disturbed at the outset of the project. This annotation will be accompanied by an order of work that reflects the order or sequence of major soil moving activities. The remaining DDAs are to be designated as "Do Not Disturb" until the contractor and resident engineer prepare the plan for BMPs to be employed. The initial BMP's shall be for the first phase (generally

Clearing and Grubbing) and shall be modified as needed as the project changes phases. The BMP Plan will be modified to reflect disturbance in additional DDA's as the work progresses. All DDA's will have adequate BMP's in place before being disturbed.

3. **Disturbed Drainage Areas.** As DDAs are prepared for construction, the following will be addressed for the project as a whole or for each DDA as appropriate:

- A. **Construction Access.** This is the first land-disturbing activity. As soon as construction begins, bare areas will be stabilized with straw ECB and a designated construction entrance will be installed.
- B. **Sources.** At the beginning of the project, all DDAs for the project will be inspected for areas that are a source of storm water pollutants. Areas that are a source of pollutants will receive appropriate cover or BMPs to arrest the introduction of pollutants into storm water. Areas that have not been opened by the contractor will be inspected periodically (once per month) to determine if there is a need to employ BMPs to keep pollutants from entering storm water.
- C. **Clearing and Grubbing.** The following BMP's will be considered and used where appropriate.
  - 1) Leaving areas undisturbed when possible.
  - 2) Silt basins to provide silt volume for large areas.
  - 3) Silt Traps Type A for small areas.
  - 4) Silt Traps Type C in front of existing and drop inlets which are to be saved
  - 5) Diversion ditches to catch sheet runoff and carry it to basins or traps or to divert it around areas to be disturbed.
  - 6) Brush and/or other barriers to slow and/or divert runoff.
  - 7) Silt fences to catch sheet runoff on short slopes. For longer slopes, multiple rows of silt fence may be considered.
  - 8) Straw ECB for areas which are not feasible for the fore mentioned types of protections.
  - 9) Non-standard or innovative methods.

At the beginning of the clearing and grubbing, the Contractor will stabilize the left bank of Trammel Creek per the Erosion Control Sheets.

- D. **Cut & Fill and Placement of Drainage Structures.** The BMP Plan will be modified to show additional BMP's such as:
  - 1) Silt Traps Type B in ditches and/or drainways as they are completed
  - 2) Silt Traps Type C in front of pipes after they are placed
  - 3) Channel Lining
  - 4) Erosion Control Blanket

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5) ECB and/or seeding for areas where construction activities will be ceased for one day or more.

6) Non-standard or innovative methods

The Contractor will install the sedimentation basins per the Erosion Control sheets.

E. **Profile and X-Section in place.** The BMP Plan will be modified to show elimination of BMP's which had to be removed and the addition of new BMP's as the roadway was shaped. Probably changes include:

- 1) Silt Trap Type A, Brush and/or other barriers, Temporary Mulch, and any other BMP which had to be removed for final grading to take place.
- 2) Additional Silt Traps Type B and Type C to be placed as final drainage patterns are put in place.
- 3) Additional Channel Lining and/or Erosion Control Blanket.
- 4) Straw ECB for areas where Permanent Seeding and Protection cannot be done within one day.

F. **Finish Work (Paving, Seeding, Protect, etc.)** – A final BMP Plan will result from modifications during this phase of construction. Probable changes include:

- 1) Removal of Silt Traps Type B from ditches and drainways if they are protected with other BMP's which are sufficient to control erosion, i.e. Erosion Control Blanket or Permanent Seeding and Protection on moderate grades.
- 2) Permanent Seeding and Protection
- 3) Placing Sod
- 4) Planting trees and/or shrubs where they are included in the project

G. **Post Construction.** BMP's including Storm Water Management Devices such as velocity dissipation devices and Karst policy BMP's to be installed during construction to control the pollutants in storm water discharges that will occur after construction has been completed are:

- Turf reinforcement mats (TRMs): TRMs will be used in areas of concentrated flow within the project limits.
- Bank stabilization using rock bank with live branch layering: The existing left bank will likely become unstable when the bridge pier is installed. Other than directly below the bridge deck, the left bank will be stabilized with rock bank and live branch layering. The banks under the existing bridge that are scheduled to be removed are/will become unstable so they will also be stabilized with a rock bank and live branch layering. The rock bank will provide short-term stabilization and the live branch layering will provide long-term stabilization. The main planting selection criteria were whether the plantings were native species

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and that they did not get any taller than about 20 feet to prevent any concerns with limbs falling onto the road.

- **Stabilization of abutment embankments:** Other than directly below the bridge deck, the abutment embankments of the new bridge will be stabilized with container plantings (CPs) and mulch. The mulch will provide short-term stabilization and the plantings will provide long-term stabilization. The main planting selection criteria were whether the plantings were native species and that they did not get any taller than about 20 feet to prevent any concerns with limbs falling onto the road.
- **Bank stabilization with live stakings:** When the existing culverts are removed the streambanks will be raw and unstable. The banks will be stabilized by sloping them back at a 2:1 slope, seeding and mulching, and covering with an erosion control blanket. This will provide temporary stabilization. During the early spring, live stakes will also be placed to provide for long term stabilization. The main vegetation selection criteria were whether they were native species.
- **Bank stabilization directly below new bridge deck:** Because vegetation growing conditions below the bridge deck are unfavorable due to a lack of sunlight, this segment of left bank and abutment embankments will be stabilized with channel lining.
- **Grade control structure (GCS):** Grade control structures will be used in areas of sheet flow to help prevent flow concentration and associated down-cutting.
- **Enhanced silt trap (EST):** Enhanced silt traps will be used in areas where concentrated flow must make an abrupt change in flow direction to enter a culvert. This BMP will also serve to control grade, reduce flow velocity, and capture silt from drainageways before reaching Trammel Creek.
- **Bridge Runoff:** To prevent bridge deck runoff from directly entering the creek, the runoff will be directed to the abutment embankment where it will be released onto the channel lining directly below the bridge deck.

Example drawings for these BMPs are attached. Though these drawings are not detailed design drawings, they provide the guidance needed to design and construct them.

## C. Other Control Measures

**Solid Materials.** No solid materials, including building materials, shall be discharged to waters of the commonwealth, except as authorized by a Section 404 permit.

**Waste Materials.** All waste materials that may leach pollutants (paint and paint containers, caulk tubes, oil/grease containers, liquids of any kind, soluble materials, etc.) will be collected and stored in appropriate covered waste containers. Waste containers shall be removed from the project site on a sufficiently frequent basis as to not allow wastes to become a source of pollution. All personnel will be instructed regarding the correct procedure for waste disposal. Wastes will be disposed in accordance with appropriate regulations. Notices stating these practices will be posted in the office.

**Hazardous Waste.** All hazardous waste materials will be managed and disposed of in the manner specified by local or state regulation. The contractor shall notify the Resident Engineer if there any hazardous wastes being generated at the project site and how these wastes are being managed. Site personnel will be instructed with regard to proper storage and handling of hazardous wastes when required. The Transportation Cabinet will file for generator, registration when appropriate, with the Division of Waste Management and advise the contractor regarding waste management requirements.

**Spill Prevention.** The following material management practices will be used to reduce the risk of spills or other exposure of materials and substances to the weather and/or runoff. (3)

### 1. Good Housekeeping:

The following good housekeeping practices will be followed onsite during the construction project.

- 1) An effort will be made to store only enough product required to do the job.
- 2) All materials stored onsite will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.
- 3) Products will be kept in their original containers with the original manufacturer's label.
- 4) Substances will not be mixed with one another unless recommended by the manufacturer.
- 5) Whenever possible, all of the product will be used up before disposing of the container.

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- 6) Manufacturers' recommendations for proper use and disposal will be followed.
- 7) The site contractor will inspect daily to ensure proper use and disposal of materials onsite.

### 2. Hazardous Products:

These practices will be used to reduce the risks associated with any and all hazardous materials.

- 1) Products will be kept in original containers unless they are not resealable.
- 2) Original labels and material safety data sheets (MSDS) will be reviewed and retained.
- 3) Contractor will follow procedures recommended by the manufacturer when handling hazardous materials.
- 4) If surplus product must be disposed of, manufacturers' or state/local recommended methods for proper disposal will be followed.

### 3. The following product-specific practices will be followed onsite:

**a) Petroleum Products:** Vehicles and equipment that are fueled and maintained on site will be monitored for leaks, and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products onsite will be stored in tightly sealed containers, which are clearly labeled and will be protected from exposure to weather.

The contractor shall prepare an Oil Pollution Spill Prevention Control and Countermeasure plan when the project that involves the storage of petroleum products in 55 gallon or larger containers with a total combined storage capacity of 1,320 gallons. This is a requirement of 40 CFR 112.

This project (will / will not) (3) have over 1,320 gallons of petroleum products with a total capacity, sum of all containers 55 gallon capacity and larger.

**b) Fertilizers:** Fertilizers will be applied at rates prescribed by the contract, standard specifications or as directed by the resident engineer. Once applied, fertilizer will be covered with mulch or blankets or worked into the soil to limit exposure to storm water. Storage will be in a covered shed. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.

**c) Paints:** All containers will be tightly sealed and stored indoors or under roof when not being used. Excess paint or paint wash water will not be discharged to the drainage or storm sewer system but will be properly disposed of according to manufacturers' instructions or state and local regulations.

**d) Concrete Truck Washout:** Concrete truck mixers and chutes will not be washed on pavement, near storm drain inlets, or within 75 feet of any ditch, stream, wetland, lake, or sinkhole. Where possible, excess concrete and wash water will be discharged to areas prepared for pouring new concrete, flat areas to be paved that are away from ditches or drainage system features, or other locations that will not drain off site. Where this approach is not possible, a shallow earthen wash basin will be excavated away from ditches to receive the wash water

**e) Spill Control Practices:** In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanup:

- 1) Manufacturers' recommended methods for spill cleanup will be clearly posted. All personnel will be made aware of procedures and the location of the information and cleanup supplies.
- 2) Materials and equipment necessary for spill cleanup will be kept in the material storage area. Equipment and materials will include as appropriate, brooms, dust pans, mops, rags, gloves, oil absorbents, sand, sawdust, and plastic and metal trash containers.
- 3) All spills will be cleaned up immediately after discovery.
- 4) The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- 5) Spills of toxic or hazardous material will be reported to the appropriate state/local agency as required by KRS 224 and applicable federal law.
- 6) The spill prevention plan will be adjusted as needed to prevent spills from reoccurring and improve spill response and cleanup.
- 7) Spills of products will be cleaned up promptly. Wastes from spill clean up will be disposed in accordance with appropriate regulations. Spills will be addressed in the "dry", and will not be "washed away" to clean.

## **D. Other State and Local Plans**

This BMP plan shall include any requirements specified in sediment and erosion control plans, storm water management plans or permits that have been approved by other state or local officials. Upon submittal of the NOI, other requirements for surface water protection are incorporated by reference into and



are enforceable under this permit (even if they are not specifically included in this BMP plan). This provision does not apply to master or comprehensive plans, non-enforceable guidelines or technical guidance documents that are not identified in a specific plan or permit issued for the construction site by state or local officials.

## **E. Maintenance**

The BMP plan shall include a clear description of the maintenance procedures necessary to keep the control measures in good and effective operating condition.

Maintenance of BMPs during construction shall be a result of twice a week and post rain event inspections with action being taken by the contractor to correct deficiencies within three business days.

Post-construction BMP maintenance will be a function of normal highway maintenance operations. Following final project acceptance by the Cabinet, district highway crews will be responsible for identification and correction of deficiencies regarding ground cover and cleaning of storm water BMPs. Post-construction BMP maintenance will be covered in the Cabinet's SMS4 permit under MCM 5 activities.

## **F. Inspections**

Inspection and maintenance practices that will be used to maintain erosion and sediment controls include the following:

- 1) All erosion prevention and sediment control measures will be inspected by the Contractor at least twice each week.
- 2) Inspections will be conducted by individuals that have received Kentucky Erosion Prevention and Sediment Control (KEPSC) training or other qualification as prescribed by the Cabinet that includes instruction relating to erosion prevention and sediment control.
- 3) Inspection reports will be written, signed, dated, and kept on file.
- 4) Stabilization of disturbed areas shall be performed within 24 hours of the cessation of the land disturbing activity.
- 5) Disturbed areas shall be stabilized prior to a rain event.
- 6) Sediment control BMPs will be maintained when the sediment reaches 1/3 the depth of the BMP.
- 7) All measures will be maintained in good working order. If a repair is necessary, it will be initiated within 24 hours of being reported and completed within three days.

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- 8) Silt fences will be inspected for bypassing, overtopping, undercutting, depth of sediment, tears, and to ensure attachment to secure posts.
- 9) Diversion dikes and berms will be inspected and any breaches promptly repaired. Areas that are eroding or scouring will be repaired and re-seeded / mulched as needed.
- 10) Temporary and permanent seeding and mulching will be inspected for bare spots, washouts, and healthy growth. Bare or eroded areas will be repaired as needed.
- 11) All material storage and equipment servicing areas that involve the management of bulk liquids, fuels, and bulk solids will be inspected weekly for conditions that represent a release or possible release of pollutants to the environment.

### **G. Non – Storm Water Discharges**

It is expected that non-storm water discharges may occur from the site during the construction period. Examples of non-storm water discharges include:

- 1) Water from water line flushings.
- 2) Water from cleaning concrete trucks and equipment.
- 3) Pavement wash waters (where no spills or leaks of toxic or hazardous materials have occurred).
- 4) Uncontaminated groundwater and rain water (from dewatering during excavation).

All non-storm water discharges will be directed to the sediment basin or to a filter fence enclosure in a flat vegetated infiltration area or be filtered via another approved commercial product.

### **H. Groundwater Protection Plan**

This plan serves as the groundwater protection plan as required by 401 KAR 5:037.

Contractor's statement: (3)

The following activities, as enumerated by 401 KAR 5:037 Section 2, require the preparation and implementation of a groundwater protection plan, and will or may be conducted as part of this construction project: (2)

\_\_\_\_\_ (e) Land treatment or land disposal of a pollutant;

\_\_\_\_\_ (f) Storing, treating, disposing, or related handling of hazardous waste, solid waste or special waste, or special waste in landfills, incinerators, surface

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impoundments, tanks, drums, or other containers, or in piles, (This does not include wastes managed in a container placed for collection and removal of municipal solid waste for disposal off site);

\_\_\_\_\_ (g) Handling of materials in bulk quantities (equal or greater than 55 gallons or 100 pounds net dry weight transported held in an individual container) that, if released to the environment, would be a pollutant;

\_\_\_\_\_ (j) Storing or related handling of road oils, dust suppressants, or deicing agents at a central location;

\_\_\_\_\_ (k) Application or related handling of road oils, dust suppressants or deicing materials, (does not include use of chloride-based deicing materials applied to roads or parking lots);

\_\_\_\_\_ (m) Installation, construction, operation, or abandonment of wells, bore holes, or core holes, (this does not include bore holes for the purpose of explosive demolition);

Or, check the following only if there are no qualifying activities

\_\_\_\_\_ There are no activities for this project as listed in 401 KAR 5:037 Section 2 that require the preparation and implementation of a groundwater protection plan.

The Contractor is responsible for the preparation of a plan that addresses the 401 KAR 5:037 Section 3. (3)

Elements of a site specific groundwater protection plan include:

- (a) General information about the project: provided in the Project information;
- (b) Activities that require a groundwater protection plan: identified above;
- (c) Practices that will protect groundwater from pollution: provided in Section 3 – Other Control Measures.
- (d) Implementation schedule – all practices required to prevent pollution of groundwater are to be in place prior to conducting the activity;
- (e) Training: all employees of the contractor, sub-contractor and construction inspection personnel will be trained to understand the nature and requirements of this plan as they pertain to their job function(s). Training will be accomplished within one week of employment and annually thereafter. A record of training will be maintained by the contractor with a copy provide to the resident engineer.
- (f) Groundwater plan activities will be inspected during the EPSC inspections.
- (g) Certification (see signature page.)

### Contractor and Resident Engineer Plan Certification

The contractor that is responsible for implementing this BMP plan is identified in the Project Information section of this plan.

The following certification applies to all parties that are signatory to this BMP plan:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. Further, this plan complies with the requirements of 401 KAR 5:037. By this certification, the undersigned state that the individuals signing the plan have reviewed the terms of the plan and will implement its provisions as they pertain to ground water protection.

Contractor and Resident Engineer Certification:

(3)  
Signed \_\_\_\_\_ title \_\_\_\_\_ , \_\_\_\_\_  
*typed or printed name<sup>1</sup> signature*

(2)  
Signed \_\_\_\_\_ title \_\_\_\_\_ , \_\_\_\_\_  
*typed or printed name<sup>2</sup> signature*

1. *Contractors Note: to be signed by a person who is the owner, a responsible corporate officer, a general partner or the proprietor or a person designated to have the authority to sign reports by such a person in accordance with 401 KAR 5:060 Section 9. This delegation shall be in writing to: Manager, KPDES Branch, Division of Water, 300 Fair Oaks Lane, Frankfort Kentucky 40601. Reference the Contract ID number and KPDES number when one has been issued.*

2. *KYTC Note: to be signed by the Chief District Engineer or a person designated to have the authority to sign reports by such a person (usually the resident engineer) in accordance with 401 KAR 5:060 Section 9. This delegation shall be in writing to: Manager, KPDES Branch, Division of Water, 300 Fair Oaks Lane, Frankfort Kentucky 40601. Reference the Contract ID number and KPDES number when one has been issued.*

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**Sub-Contractor Certification**

The following sub-contractor shall be made aware of the BMP plan and shall be responsible for implementation of BMPs identified in this plan as follows:

Subcontractor

Name:

Address:

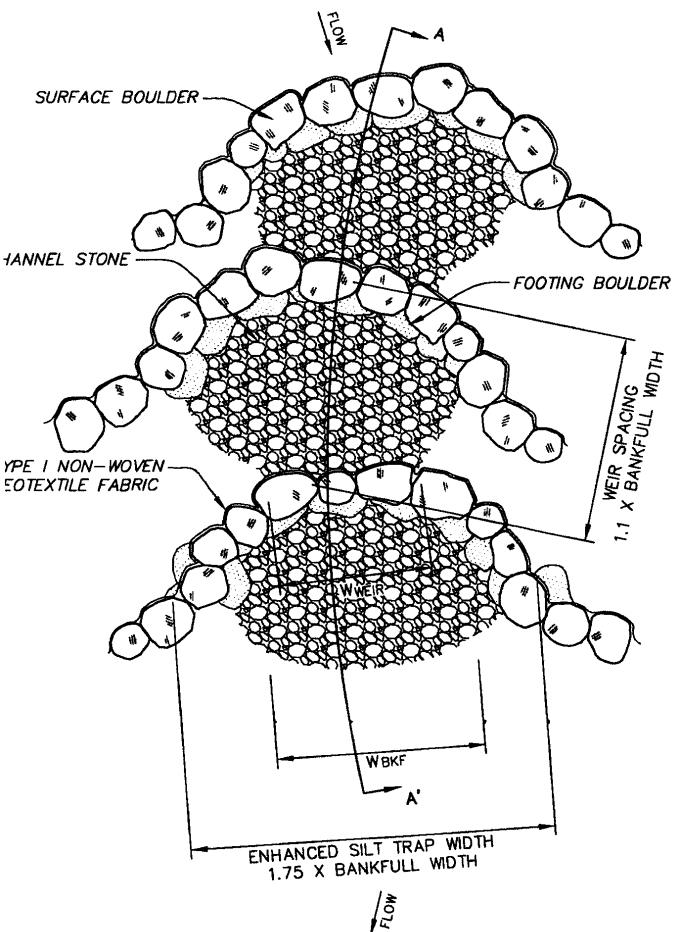
Phone:

The part of BMP plan this subcontractor is responsible to implement is:

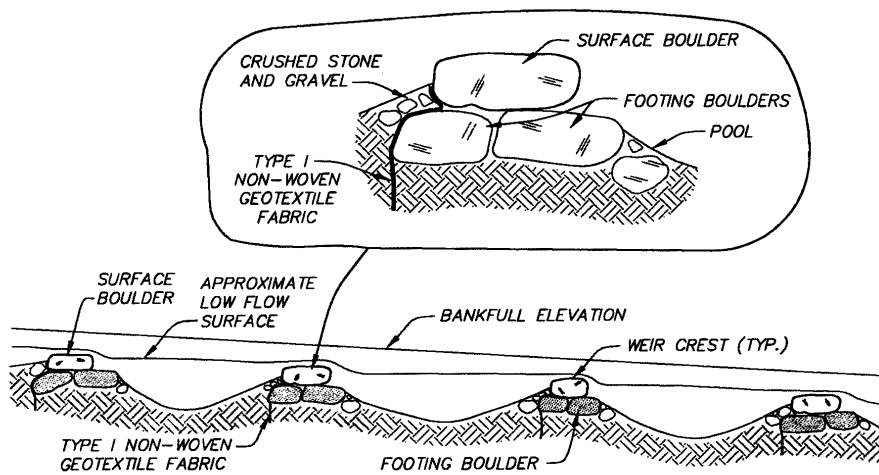
I certify under penalty of law that I understand the terms and conditions of the general Kentucky Pollutant Discharge Elimination System permit that authorizes the storm water discharges, the BMP plan that has been developed to manage the quality of water to be discharged as a result of storm events associated with the construction site activity and management of non-storm water pollutant sources identified as part of this certification.

Signed \_\_\_\_\_ title \_\_\_\_\_ , \_\_\_\_\_  
*typed or printed name<sup>1</sup> signature*

1. Sub Contractor Note: To be signed by a person who is the owner, a responsible corporate officer, a general partner or the proprietor or a person designated to have the authority to sign reports by such a person in accordance with 401 KAR 5:060 Section 9. This delegation shall be in writing to: Manager, KPDES Branch, Division of Water, 300 Fair Oaks Lane, Frankfort Kentucky 40601. Reference the Contract ID number and KPDES number when one has been issued.



**ENHANCED SILT TRAP PLAN**

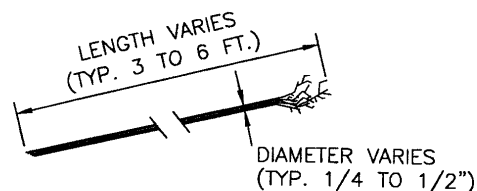
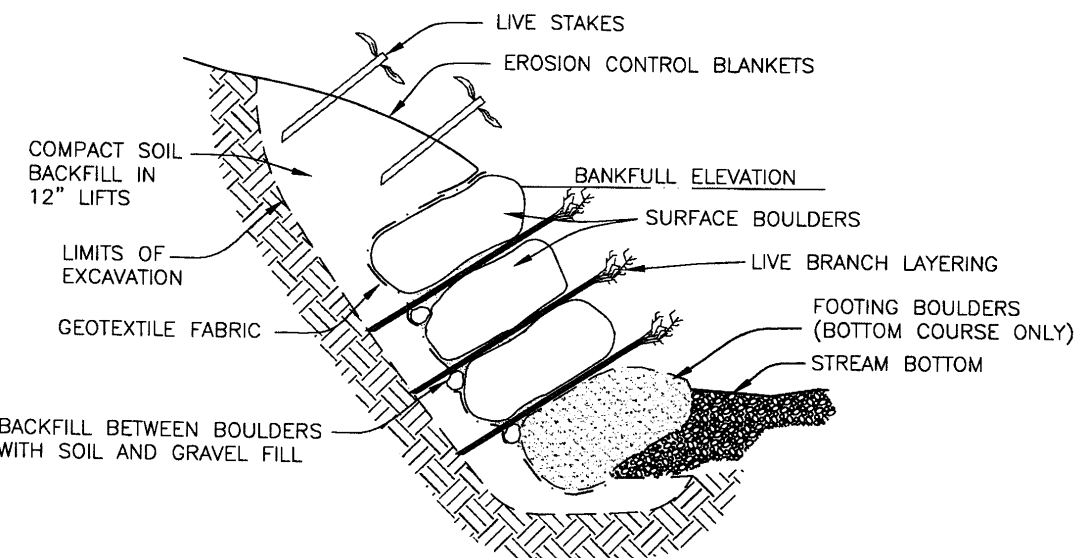


**SILT TRAP PROFILE - A-A'**

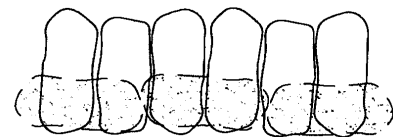
**DETAIL -- ENHANCED SILT TRAP**  
SCALE: NOT TO SCALE



**Stantec**



LIVE BRANCH



PLAN VIEW

PLACEMENT OF BOULDERS,  
SEE NOTE 2.

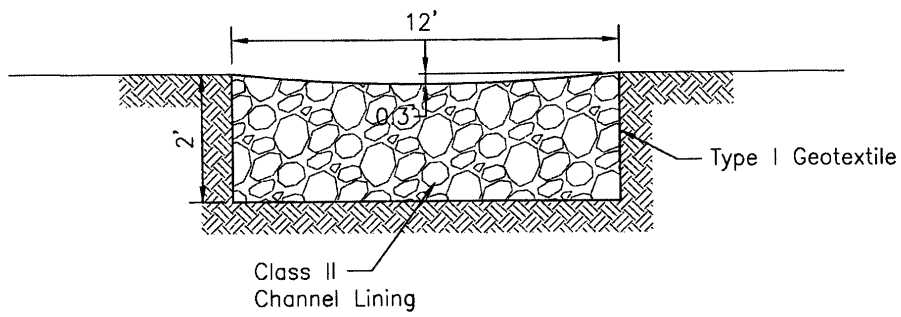
NOTE:

1. PLACE BOULDERS BELOW BANKFULL ELEVATION FLUSH WITH FINISHED CHANNEL BANK AS SHOWN.
2. EACH LIFT OF BOULDERS SHALL BE PLACED WITH THE LONG AXIS PERPENDICULAR WITH THE LONG AXIS OF THE BOULDERS PLACED IN THE LOWER COURSE.
3. PLACE A LAYER OF SOIL AND LIVE BRANCHES BETWEEN EACH COURSE OF BOULDERS.
4. PLACE LIVE BRANCHES SUCH THAT 2/3 OF THE BRANCH WILL BE COVERED WITH SOIL AND 1/3 OF THE BRANCH IS EXPOSED, EXTENDING BEYOND THE FACE OF THE BANK.
5. PLACE A MINIMUM OF 8 TO 12 STEMS PER RUNNING FOOT OF BANK IN A SLIGHT CRISS-CROSS PATTERN. BACKFILL ON TOP OF LIVE BRUSH WITH A 3-INCH LAYER OF TOPSOIL.

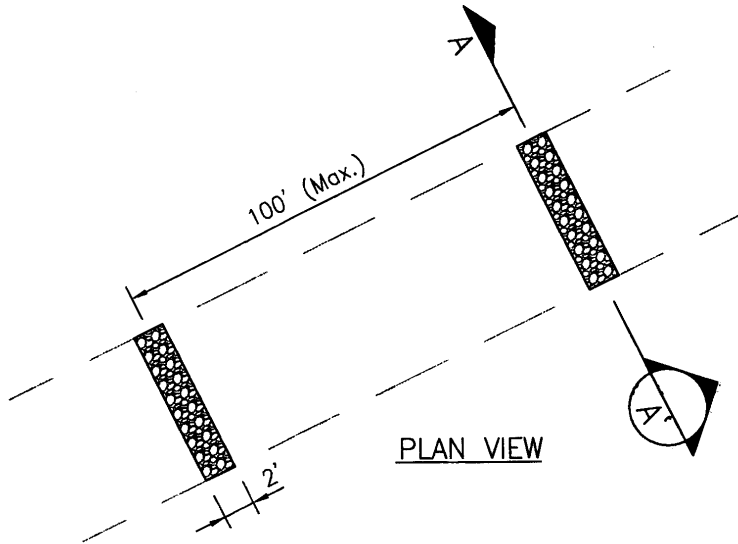
DETAIL — ROCK BANK WITH LIVE BRANCH  
SCALE: NOT TO SCALE



**Stantec**



SECTION A-A'

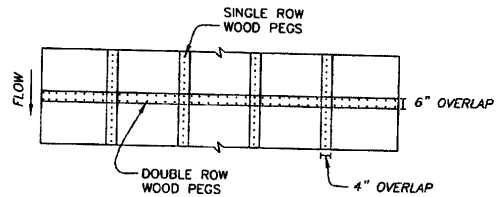
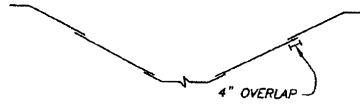
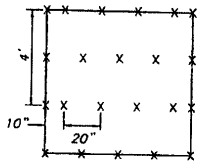


PLAN VIEW

TYPICAL DETAIL OF GRADE CONTROL STRUCTURE FOR AREAS OF SHEET FLOW  
 N.T.S.



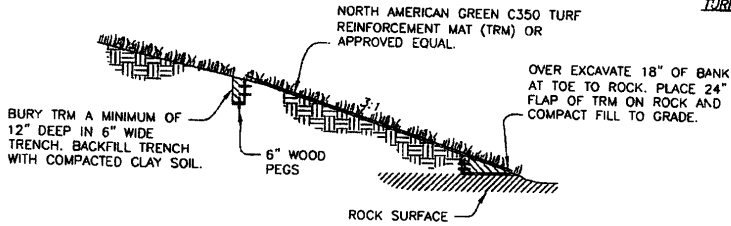




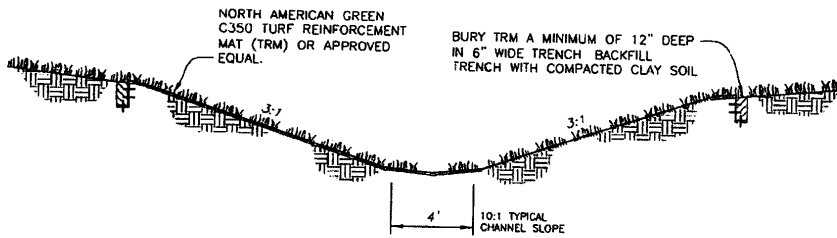
TURF REINFORCEMENT MAT OVERLAP

TURF REINFORCEMENT MAT (TRM) NOTES

1. PREPARE SOIL BEFORE INSTALLING MAT, INCLUDING APPLICATION OF LIME, FERTILIZER AND SEED.
2. BEGIN AT UPSTREAM END OF CHANNEL BY ANCHORING MAT IN 12" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT CLAY SOIL IN TRENCH AFTER INSTALLING 6" WOOD PEGS.
3. ROLL CENTER MAT IN DIRECTION OF WATER FLOW ON THE BOTTOM OF CHANNEL.
4. PLACE MATS END OVER END (SHINGLE STYLE WITH UPSTREAM END ON TOP) WITH A 6" OVERLAP. USE A DOUBLE ROW OF STAGGERED 6" WOOD PEGS SPACED 4" APART TO SECURE MAT AT OVERLAP POINTS.
5. MATS ON SIDE SLOPES MUST OVERLAP CENTER BLANKET A MINIMUM OF 4". USE A SINGLE ROW OF STAGGERED 6" WOOD PEGS SPACED 4" APART TO SECURE MAT AT OVERLAP POINTS.
6. FULL LENGTH EDGE OF MATS AT TOP OF SIDE SLOPES MUST BE ANCHORED IN 12" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT CLAY SOIL IN TRENCH AFTER INSTALLING 6" WOOD PEGS.
7. THE TERMINAL END OF MATS MUST BE ANCHORED IN 12" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT CLAY SOIL IN TRENCH AFTER INSTALLING 6" WOOD PEGS.
8. SECURE MAT THROUGHOUT WITH 6" WOOD PEGS. USING PATTERN SHOWN. INSTALLED MAT SHALL BE TAUT, LAYING FLUSH WITH SOIL SURFACE, IN CORRECT ALIGNMENT AND LOCATION, AND PROPERLY ANCHORED TO PREVENT DISPLACEMENT.



TURF REINFORCEMENT MAT ON BANK IN ROCK



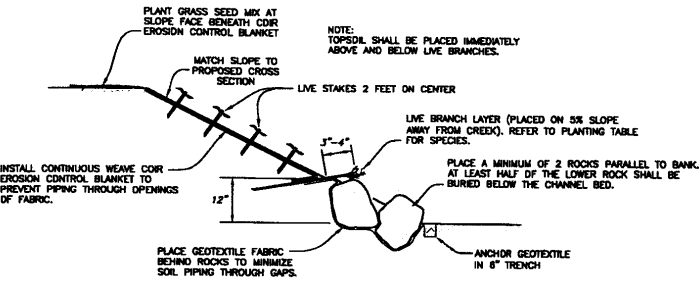
TURF REINFORCEMENT MAT IN EARTHEN CHANNEL

○ DETAIL - EARTHEN TURF REINFORCEMENT MAT CHANNEL  
SCALE: NOT TO SCALE

TURF-MAT.DWG

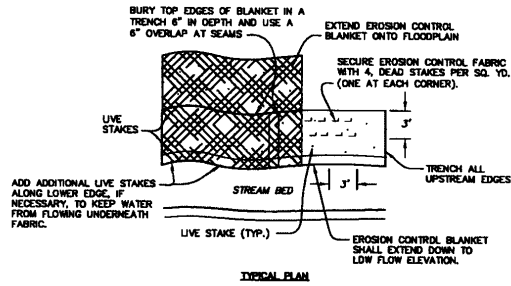


Stantec



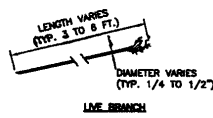
#### NOTES:

1. PLACE A MINIMUM OF 2 ROCKS, STARTING AT CHANNEL BOTTOM, TO PROVIDE BASE OF SLOPE. BURY LOWER-MOST ROCK A MINIMUM OF  $\frac{1}{4}$  THE DIAMETER OF THE ROCK, BY PUSHING DOWN INTO THE SOIL UNTIL FIRM MATERIAL ENCOUNTERED. PLACE GEOTEXTILE FABRIC BEHIND ROCK TO PREVENT PIPING THROUGH GAPS BETWEEN ROCKS. THE OUTER FACE OF THE ROCKS SHALL BE STACKED IN A 2:1 SLOPE OR FLATTER. THE ROCKS, AFTER PLACEMENT, SHOULD OCCUPY THE FIRST 2 FEET OF BANK ABOVE CHANNEL BED. PLACE MORE THAN 2 ROCKS IF NEEDED.
2. BACKFILL BEHIND ROCKS WITH SOIL TO CREATE A PLANTING SURFACE SLOPE APPROXIMATELY 5% AWAY FROM CREEK. WIDTH OF PLANTING SURFACE SHOULD BE A MINIMUM OF 2 FEET. PLACE TOPSOIL ON PLANTING SURFACE AND PLACE LIVE BRUSH SUCH THAT  $\frac{2}{3}$  OF THE BRUSH WILL BE COVERED WITH SOIL AND  $\frac{1}{3}$  OF THE BRUSH IS EXPOSED, EXTENDING BEYOND THE FACE OF THE BANK. PLACE A MINIMUM OF 8 TO 12 STAKES PER RUNNING FOOT OF BANK IN A SLIGHT CRISS-CROSS PATTERN. BACKFILL ABOVE LIVE BRUSH WITH A 3 INCH LAYER OF TOPSOIL.
3. LAY THE EROSION CONTROL BLANKET OVER THE LIVE BRUSH LAYER SUCH THAT A MINIMUM OF TWO FEET OF BLANKET IS OVER THE NEWLY PLACED LIVE BRUSH AND TOPSOIL. LAY THE BLANKET DOWN-SLOPE AND PLACE A ONE-FOOT-THICK LAYER OF SOIL OVER THE BLANKET. GENTLY COMPACT THIS SOIL BY USING THE EXCAVATOR BUCKET CAREFULLY SO THAT THE UNDERLYING BRUSH AND LOGS ARE NOT DISPLACED OR DAMAGED. WHEN STARTING TO PLACE THE FILL, OFFSET THE FILL APPROXIMATELY 3 TO 4 INCHES BACK FROM THE FACE OF THE SLOPE TO CREATE A SLIGHT TERRACE. BACKFILL THE REMAINING PORTION OF EXCAVATED BENCH AND COMPACT AGAIN. ON THE OUTER FACE OF THE SLOPE, WHICH WILL BE EXPOSED TO FLOW, PLACE 2 INCHES OF TOPSOIL, SEED AND COVER WITH CONTINUOUS WEAVE EROSION CONTROL BLANKET SUCH THAT SOIL CANNOT PIPE THROUGH THE OPENINGS IN THE BLANKET. WRAP THE EROSION CONTROL BLANKET OVER THE FACE OF THE SLOPE AND UP THE SLOPE. EXTEND THE BLANKET UP ONTO THE TOP OF SLOPE. BURY THE EDGE OF THE FABRIC WITH SOIL. SECURE THE FABRIC WITH STAKES PER THE PLANS.
4. CONSTRUCT THE SLOPES SUCH THAT THE OVERALL SLOPE MATCHES THE PROPOSED CROSS SHAPE.
5. ABOVE LIVE BRUSH LAYER, INSTALL LIVE STAKES 2-FOOT ON CENTER, EXTENDING THE LENGTH AND HEIGHT OF BANK/SLOPE.

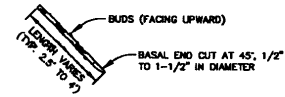


#### NOTES:

1. PREPARE THE SEEDBED AND PLACE SEED AND STRAW PRIOR TO INSTALLING EROSION CONTROL BLANKETS (ECB).
2. INSTALL DEKOWE 700 (OR EQUIVALENT) COIR FIBER BLANKET ALONG STREAM REACHES THAT RECEIVE EXCAVATION (BANK WORK).
3. ADDITIONAL STAKING SHALL BE APPLIED IF THE EROSION CONTROL BLANKET SEPARATES FROM THE SOIL.
4. LIVE STAKES SHALL BE CUT FROM AN APPROVED SOURCE WITH A SHARP TOOL. STAKE SHALL BE FREE FROM DISEASE OR EXCESS DEAD TWIGS. 2.5 TO 4 FEET IN LENGTH WITH A BASAL END 0.5 TO 1.5 INCH IN DIAMETER. PRIOR TO INSTALLATION BASAL END SHALL BE CUT AT A 45 DEGREE ANGLE AND THE END SHALL BE CUT FLAT WITHOUT CRACKS.
5. LIVE STAKES SHALL BE INSTALLED BY GENTLY TAMPING INTO THE SOIL LEAVING 8 TO 16 INCHES EXPOSED (I.E. 8 INCHES FOR 2 FEET LONG STAKES). STAKES SHALL BE PLACED IN A RANDOM PATTERN.
6. LIVE STAKES SHALL BE INSTALLED WHEN THEY ARE DORMANT, WHICH TYPICALLY OCCURS BETWEEN NOVEMBER 1 AND MARCH 31.



LIVE BRANCH



SEE PLANTING TABLE FOR SPECIES.

LIVE STAKE

#### DETAIL - BANK STABILIZATION WITH LIVE STAKING

SCALE: NOT TO SCALE





**KPDES Individual Permit  
Supplemental Data**

Bridge Replacement over Trammel  
Creek (KY 100)



**Stantec**



February 8, 2010

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## **1.0 Project Background**

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The Kentucky Transportation Cabinet (KYTC) is proposing replacement of the Franklin Road Bridge (KY 100) and approaches over Trammel Creek in Allen County. The project site is located within KYTC District 3 about 1.0 mile southwest of KY 585 near the Town of Chapel Hill.

KYTC conducted an integrity assessment, which assigns a value from one (1) to one hundred (100), for this bridge on KY 100. The bridge received a value of 72 which does not require the bridge to be placed on the replacement list. However, KYTC selected this bridge for replacement due to its substandard width and curing approaches that make for unsafe driving conditions; especially for large trucks.

Trammel Creek is classified as a “special use water” by the Kentucky Division of Water, and more specifically an “exceptional water” as shown in 401 KAR 10:030 Section 1 (2) and an “outstanding state resource water” and “cold water habitat” as shown in 401 KAR 10:026 Section 5 (3)(a). Due to this classification, special considerations during design, construction, and post-construction have and will be observed. These considerations include but, are not limited to, the use of enhanced Best Management Practices (BMPs) during construction and installation of enhanced BMPs for post-construction.

## **2.0 Environmental Considerations**

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This section describes the activities that KYTC has implemented to address environmental concerns.

### **2.1 SPECIAL CONSIDERATIONS**

#### **2.1.1 Environmentally Sensitive Features**

The one environmentally sensitive feature for this project is Trammel Creek, an “exceptional water”, “outstanding state resource water” and a “cold water aquatic habitat”.

#### **2.1.2 Pollutants of Concern**

The main pollutant of concern for this project is sediment. Trammel Creek contains existing eroded banks as well as the potential for more erosion during construction. During the construction of this project BMPs will be implemented to minimize sediment from the construction site. In addition, river bank stabilization will be implemented to reduce streambank erosion.

### **2.2 EROSION PREVENTION AND SEDIMENT CONTROL (EPSC) SWPPP**

The following site specific EPSC BMPs have been developed specifically for this project. These BMPs are over and above the standard EPSC BMPs, as indicated in the table below. The remainder of the EPSC BMPs will be represented in KYTC’s SWPPP, which is jointly developed with the resident engineer and the Contractor and incorporates the Contractor’s means and methods. These site-specific BMPs are also included in the EPSC BMP Template.

<b>Area to be Treated</b>	<b>Standard BMP</b>	<b>Enhanced/Site Specific BMP</b>
1 –Banks of Trammel Creek	Channel lining.	Rock bank with live branches
2 – Approximate Station 315+00. Drainage channel south of the new road.	Silt Trap	Sedimentation basin

#### **2.2.1 Design Storms**

EPSC BMPs will be designed to properly function at a 5-year/24-hour design storm, except for the sedimentation basin.

#### **2.2.2 Enhanced/Site Specific BMPs**

The following enhanced/site specific EPSC BMPs will be utilized on this project. These BMPs include both structural and non-structural measures. The structural BMPs are shown on the

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Plan drawings, contained in Attachment A. All BMPs are in accordance with Sections 212 (Erosion Control) and 213 (Water Pollution Control) of KYTC's 2008 Standard Specifications.

**Structural**

- Sedimentation basins: designed hydraulically for a 2-year/24-hour storm.
- Existing streambank stabilization: the existing streambanks along the left bank of Trammel Creek within the project site are steep and unstable. The banks will be stabilized as noted previously. This work will be required at the outset of the project.

**Non-structural**

- Appropriate stock of straw ECB shall be available onsite at all times.
- Straw ECB or blown straw shall be applied within 24 hours of the cessation of the land disturbing activity. If blown straw is used, the blower shall be kept on-site during land disturbing activities.
- Disturbed areas shall be stabilized prior to a rain event.
- EPSC/SWPPP inspections will be performed at least twice a week.
- Sediment control BMPs will be maintained when the sediment reaches 1/3 the depth of the BMP.

Deconstruction of the existing bridge will be done utilizing heavy equipment and erosion controls to prevent sediment from entering Trammel Creek. Netting and tarps will be placed under the existing bridge to catch and prevent large pieces of concrete from entering Trammel Creek during demolition. In the unforeseen event that debris does enter the stream, it will be removed immediately. As the substrate underneath the existing bridge is primarily bedrock, it is believed that debris falling into the creek will not permanently alter flow regimes or substrate homogeneity if removed quickly. A temporary work pad using clean rock fill will be constructed to allow access to the pier in the water before deconstruction of the bridge commences. A cofferdam will be placed around piers currently in the water or the stream's edge to minimize sediment associated with deconstruction from entering the stream. After all debris has been removed, the temporary work pad will be removed.

### **3.0 Antidegradation**

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#### **3.1 PUBLIC NOTICE**

The Kentucky Division of Water will public notice the draft permit and allow a public comment period of at least thirty (30) days. The notice shall be published in a daily or weekly newspaper within the area affected by the activity.

#### **3.2 ALTERNATIVES EVALUATION**

Four alternatives were evaluated during a NEPA study for this project. The four alternatives were:

- Do nothing.
- Realignment to the north of the existing alignment, locating bridge just downstream of existing bridge.
- Realignment to the south of the existing alignment, locating the bridge just upstream of the existing bridge.
- Realignment to the south of the existing alignment, locating the bridge upstream of the existing bridge.

The fourth alternative was chosen because it provides the greatest improvement to travel safety through this area.

#### **3.3 POST-CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN**

Post-construction BMPs are designed to provide long-term stormwater management to efficiently and effectively manage stormwater runoff from project sites. Post-construction BMPs are intended to treat stormwater runoff and reduce peak flows to pre-project conditions. Typically, post-construction BMPs are designed to manage the first flush of runoff, meaning that it will treat the initial concentration of contaminated runoff. The pollutant concentration in the first flush is typically greater than subsequent runoff volumes in the same wet weather event. Post-construction BMPs may be designed per water quality and/or water quantity requirements.

##### **3.3.1 Post-construction SWPPP**

The following post-construction BMPs are proposed to be used on the project:

- Turf reinforcement mats (TRMs): TRMs will be used in areas of concentrated flow within the project limits.



- Bank stabilization using rock bank with live branch layering: The existing left bank will likely become unstable when the bridge pier is installed. Other than directly below the bridge deck, the left bank will be stabilized with rock bank and live branch layering. The banks under the existing bridge that are scheduled to be removed are/will become unstable so they will also be stabilized with a rock bank and live branch layering. The rock bank will provide short-term stabilization and the live branch layering will provide long-term stabilization. The main planting selection criteria were whether the plantings were native species and that they did not get any taller than about 20 feet to prevent any concerns with limbs falling onto the road.
- Stabilization of abutment embankments: Other than directly below the bridge deck, the abutment embankments of the new bridge will be stabilized with container plantings (CPs) and mulch. The mulch will provide short-term stabilization and the plantings will provide long-term stabilization. The main planting selection criteria were whether the plantings were native species and that they did not get any taller than about 20 feet to prevent any concerns with limbs falling onto the road.
- Bank stabilization with live stakings: When the existing culverts are removed the streambanks will be raw and unstable. The banks will be stabilized by sloping them back at a 2:1 slope, seeding and mulching, and covering with an erosion control blanket. This will provide temporary stabilization. During the early spring, live stakes will also be placed to provide for long term stabilization. The main vegetation selection criteria were whether they were native species.
- Bank stabilization directly below new bridge deck: Because vegetation growing conditions below the bridge deck are unfavorable due to a lack of sunlight, this segment of left bank and abutment embankments will be stabilized with channel lining.
- Grade control structure (GCS): Grade control structures will be used in areas of sheet flow to help prevent flow concentration and associated down-cutting.
- Enhanced silt trap (EST): Enhanced silt traps will be used in areas where concentrated flow must make an abrupt change in flow direction to enter a culvert. This BMP will also serve to control grade, reduce flow velocity, and capture silt from drainageways before reaching Trammel Creek.
- Bridge Runoff: To prevent bridge deck runoff from directly entering the creek, the runoff will be directed to the abutment embankment where it will be released onto the channel lining directly below the bridge deck.

These BMPs are over and above the standard post-construction BMPs, as indicated in the following table.

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<b>Area to be Treated</b>	<b>Standard BMP</b>	<b>Enhanced/Site Specific BMP</b>
1 – Approximate Station 301+00. Drainage channel south of the new road.		Enhanced silt traps (EST)
2 – Approximate Station 301+00. Drainage channel north of the new road.	Rock lined channel	Turf reinforcement mat (TRM)
3 – Approximate Station 309+00. Drainage channel north of the new road.	Erosion control blanket	Turf reinforcement mat (TRM)
4 – Approximate Station 314+25 to Station 315+60. Sheet flow from north side of embankment.	None	Grade control structures (GCS)
5 – Approximate Station 314+75 to 315+75. Drainage channel south of the new road and west of the creek	Turf reinforcement mat	Turf reinforcement mat and enhanced silt traps (TRM and EST)
6 – Embankments of new bridge abutments	Channel lining	Container Plantings (CP) and mulch
7 – Left bank adjacent to new bridge	None	Rock bank with live branch layering
8 – Banks under and beside existing bridge location	None	Rock bank with live branch layering
9 – Approximate Station 318+50 to 321+00. Sheet flow north and south of the new road and east of the creek	None	Grade control structures (GCS)
10 – Approximate Station 323+00. Banks exposed from removal of existing 5' x 5' RCBC.	None	Bank stabilization with live staking
10 – Approximate Station 323+00 to 324+50. Sheet flow north of the new road and east of the 60" culvert	None	Grade control structures (GCS)
11 – Approximate Station 322+00 to 323+00. Sheet flow south of the new road, north of the new access road, and west of the 60" culvert	None	Grade control structures (GCS)
12 – Approximate Station 323+00 to 324+50. Drainage channel south of the new road and east of the 60" culvert.	Turf reinforcement mat	Turf reinforcement mat and enhanced silt traps (TRM and EST)
13 – Approximate Station 323+00 to 324+00. Sheet flow south of the new	None	Grade control structures

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road, north of the new access road and east of the 60" culvert		(GCS)
14 – Approximate Station 323+50 to 324+00. Drainage channel south of the access road and east of the 60" culvert	Erosion control blanket	Erosion control blanket and enhanced silt trap (ECB and EST)
15 – Approximate Station 331+50 to 332+50. Sheet flow north of the new road	None	Grade control structures (GCS)
16 – Approximate Station 332+10 to 332+65. Drainage channel south of the new road.	Turf reinforcement mat	Turf reinforcement mat and enhanced silt traps (TRM and EST)
17 – Approximate Station 334+00 to 335+50. Sheet flow north of the new road.	None	Grade control structure (GCS)
18 – Approximate Station 335+50. Culvert outlet north of the new road	None	Bank stabilization with live staking (LS)
19 – Approximate Station 336+25. Drainage channel south of new road coming from east and west	Turf reinforcement mat on east and none on west	Turf reinforcement mat and enhanced silt trap on east and enhanced silt trap on west (TRM and EST)
20 – Approximate Station 336+00 to 337+25 and 338+75 to 340+00. Sheet flow north of the new road	None	Grade control structures (GCS)
21 – Approximately Station 337+25 to 338+25. Embankment between road and drainage ditch.	None	Bank stabilization without live staking
22 – Bridge Deck	None	Redirect bridge deck runoff to abutment embankments preventing runoff from directly entering creek.

**3.3.1.1 Live Stakes**

The following plant species can be used as live stakes and live brush layering for this project:

Common Name	Species Name	Stems per acre	Frequency (%)	Soil Conditions
Buttonbush	<i>Cephalanthus occidentalis</i>	79	22	Wet (near edge of water)

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Silky Dogwood	<i>Cornus amomum</i>	79	22	Mesic - Wet
Black Willow	<i>Salix nigra</i>	79	22	Wet
Sandbar Willow	<i>Salix exigua</i>	79	22	Wet
Elderberry	<i>Sambucus canadensis</i>	44	12	Mesic - Wet
<b>Total</b>		360	100	

The live stakes should be planted such that the species are intermixed, not clumped.

**3.3.1.2 Container Plantings**

The following plant species can be used as container plantings for this project:

Common Name	Species Name	Stems per acre	Frequency (%)
Smooth Sumac	<i>Rhus glabra</i>	50	20
Witch-hazel	<i>Hamamelis virginiana</i>	50	20
Gray Dogwood	<i>Cornus racemosa</i>	25	10
Black Haw	<i>Viburnum prunifolium</i>	25	10
Sourwood	<i>Oxydendrum arboretum</i>	25	10
Redbud	<i>Cercis canadensis</i>	25	10
Papaw	<i>Asimina triloba</i>	25	10
Spicebush	<i>Lindera benzoin</i>	25	10
<b>Total</b>		250	100

**3.3.1.3 Estimate of Additional BMP Quantities**

The following table is an estimate of the quantities of post-construction BMPs needed on this project that were not included in the original design.

BMP	Unit	Quantity
Turf Reinforcement Mat (TRM)	Square Yard	65
Enhanced Silt Traps (EST)	Each	7
Grade Control Structures (GCS)	Each	14
Container Plantings (CP) and Mulch	Acre	0.27
Rock Bank with Live Branch Layer	Square Yard	570
Bank Stabilization with Live Staking	Square Yard	515
Bank Stabilization without Live Staking	Linear Foot	100

**3.3.2 Effort to Minimize Discharges**

During the design of this project, consideration was given to reducing the number of discharge locations. This effort led to allowing sheet flow to occur along 14 separate areas along the project.

**3.3.3 Evaluation of Alternative Discharge Locations**

The project was evaluated for alternative discharge locations. Due to the topography of the site, there were no other viable alternatives.

**3.3.4 Alternative Post-Construction BMPs**

Various post-construction BMPs were considered for this project. The ones selected were chosen because of the soil type, the available area, the topography and the amount of flow to manage.

**3.4 ASSESMENT OF JUSTIFIABLE RISK**

This project replaces a bridge that has reached the end of its useful life and provides a bridge that is adequately wide to allow the passage of two vehicles, which will lead to safer passage through this portion of the road.

**3.5 SOCIOECONOMIC DEMONSTRATION**

The following questions were addressed to demonstrate the socioeconomic considerations for this project.

**Describe the effect of the project on the employment of the area.** The proposed project will allow the traveling public and local residents safer and more efficient access to employment opportunities within the project area by replacing a substandard bridge with a modern bridge that meets current design standards. The project will also provide opportunities for local residents to realize economic benefit by employment opportunities during the construction and maintenance of the facility.

**Describe how the project will increase or avoid the decrease of area employment.** Due to the nature of employment in the area, the proposed project will likely have a negligible affect on employment but will allow area residents to maintain employment by allowing the traveling public to continue to maintain access to employment opportunities.

**Describe the project's industrial or commercial benefits to the community.** The project will benefit the community both short-term and long-term. Short-term benefits will be realized through employment during the construction phase of the project. Local and regional businesses may also enjoy economic benefits from contractors and their employees purchasing materials, goods, and services in the project area. The community and region may experience

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long-term benefits from the project as maintenance, bridge inspections, and other activities associated with the maintenance of the facility require materials, goods, and services to be purchased. The wider bridge will likely encourage the use of more commercial vehicular traffic, which will lead to economic benefits of the community.

**Describe any other economic or social benefits the project will have to the community.**

Because the project consists of a slight roadway re-alignment as part of the bridge replacement, there are not any other anticipated economic or social benefits to the community.

**How many and in what manner will households be economically or socially impacted?**

There is an anticipated six jobs that will be developed during the construction and maintenance of the project. Therefore, up to six households in the area will be economically benefited by new employment or better employment.

	YES	NO
1. Will this project be likely to change median household income in the area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Will this project likely change the market value of taxable property in the area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Will this project increase revenues in the area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Will any public buildings be affected by this project?	<input type="checkbox"/>	<input checked="" type="checkbox"/>









